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Rural electrification. By J.P. Schaenzer. N.Y., Bruce Publishing Co., 1935. 259p. The book is written especially for vocational agricultural teachers, but since very little has been published on this subject, it will be a distinct contribution to the field of rural electrification. Each chapter is divided into the following sections: 1. Class discussion, 2. Equipment, 3. Demonstrations, 4. Practice and problems, 5. Information, 6. Suggested readings. Numerous tables and charts together with illustrations incorporate additional material relative to electrical data as applied to farm life. The author begins his discussion with a picture of electricity as a means of power, its manufacture and distribution together with its introduction as a service to farm customers. This is followed by several chapters on wiring, the proper materials to be used and plans for wiring various farm buildings. The author also includes a discussion of a large number of applications for the farm and home which is supplemented by a study of the installation, operation and maintenance of electrical mechanism. Each chapter is completed by a list of supplementary reading which gives additional sources of information. Written in a simple, concise and straight-to-the-point manner, this volume fills an urgent need in the field of rural electrification.

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Agitators.

Tests of flat steel agitator blades. By K.R. Frost. Agricultural Engineering. v.16, no. 11. November, 1935. p. 443-445. Use of flat blades has been chosen as best method of agitating oil sprays because (1) agitation is more uniform, (2) there is lower energy consumption, (3) power transmission is less complicated, and (4) conversion from existing equipment is least expensive.

Agricultural Engineering.

What is ahead for the farmer and the engineer? By L.F. Livingston. Agricultural Engineering. v.16, no.11. November, 1935. p.429-430.

Agriculture.

What's ahead in farming? By L.F. Livingston. Better Farm Equipment and Methods. v.8, no.3-4. p.6-7, 25-26. Scientists and engineers to play important roles in agricultural prosperity.

Air Conditioning.

How to figure air conditioning. By Harold M. Hendrickson. Refrigerating Engineering. v.30, no.5. November, 1935. p.272-275.

New psychrometric chart - its construction and use. By F.O. Urban. Refrigerating Engineering. v.30, no.5. November, 1935. p.276-281.

Standard methods for rating and testing air conditioners. Electric Refrigeration News. v.16, no.12. November 20, 1935. p.12, 13, 16. Part 1. Index: A. Scope, B. Classification. C. Ratings. D. Instruments and apparatus. E. Testing cooling equipment. F. Testing heating equipment. G. Testing humidifying equipment. H. Definitions.

Standard tests used in rating air-conditioning equipment. Electric Refrigeration News. v.16, no.13. November 27, 1935. p.12, 14, 16. Part 2.

Building Construction.

Fixed-end moments by cardboard models. By William J. Eney. Engineering News-Record. v.115, no.24. December 12, 1935. p.814-816. New apparatus and procedure furnish simple means of determining elastic constants for Cross method of indeterminate structure analysis.

Man-made earthquakes. By Franklin P. Ulrich. Engineering News-Record. v.115, no.20. November 14, 1935. p.680-682. To advance knowledge of earthquake effects, artificial oscillations are imparted to towers, buildings, bridges and dams, and resultant motions are measured.

Notes on the architecture. By William Graves Perry. Architectural Record. v.78, no. 6. December, 1935. p.363-377. Discussion of the restoration of Williamburg.

Role of materials in modern housing. By John Ely Burchard. Architectural Record. v.78, no.5. November, 1935. p.341-346. Structural requirements. Vegetable group. Concretes. Ceramics. Synthetics.

Settlement of footings in alluvial soil. By Frederick J. Converse Engineering News-Record. v.115, no.22. November 28, 1935. p. 746-747. Bearing tests on Los Angeles basin soils during reconstruction following earthquake indicate variations with size of footing, moisture content and underlying strata.

Shrinkage of mortars. By E.W. Scripture, Jr. Architectural Record. v.78, no.5. November, 1935. p.347-351. Principal cause of leaky brickwork.

Building Construction. (Cont'd.)

Small house footing design. By Sheldon D. Werner. Architectural Record. v.78, no.5. November, 1935. p.311-312.

Untreated lumber in frame homes will last indefinitely. Northwest Farmer. v.4, no.9. November, 1935. p.4. Wooden building properly constructed and intelligently maintained is in little danger from either decay or insect attack and will give indefinitely long life at low annual cost. On other hand, wooden building constructed in defiance of well-known principles of good building practice can deteriorate fairly rapidly and be heavy expense to its owner. Most decay and terminate damage can be traced directly to failure to apply these principles. Important precautions for preventing damage by decay and termites are to keep wood dry at all times and away from contact with ground and, in territory infected with termites or white ants, to insulate wood completely from ground by metal termite shields.

Central Valley Water Project.

Central Valley funds reallocated allowing use of revised plans. Engineering News-Record. v.115, no.24. December 12, 1935. p.831. Under provisions of reallocation bureau is empowered to proceed in what it considers most economical manner of constructing project, subject only to limitation which prohibits encumbering by contract funds in excess of $15,000,000 which now is available for the work. Under plan allocation would be spent as follows: Excavation and preparation for building Kennett Dam on Sacramento River $500,000; construction of Contra Costa Conduit Canal $2,500,000; purchase of water rights in San Joaquin Valley $2,000,000; construction of Friant Dam on San Joaquin River, $3,500,000; beginning construction on Madera Canal $500,000; beginning construction of Friant-Kern Canal, $1,000,000.

Columbia River.

Developing the mighty Columbia. By C.H. Vivian. Compressed Air Magazine. v.40, no.9. September, 1935. p.4815-4821.

Coolers.

Milk cooler is simple. By Ben Gawley. Washington Farmer. v.60, no.23. November 14, 1935. p.12. Efficient ice pan device is inexpensive to make and use. It consists of three graduated pans, set one within the other, and surrounded with chopped ice and salt. Milk runs into second pan, filling space between first and second pans. First pan is filled with salt-ice mixture. These two pans set into large wooden bottom tray, which like uppermost pan, is filled with chopped ice. Thus when milk runs into cooler, it has ice-cooled surfaces to run between.

Cotton and Cotton Ginning.

Cleaners and extractors. By Charles A. Bennett. Cotton Ginners' Journal. v.7, no.3. December, 1935. p.5-6, 9-10. Reprint, except for some of the illustrations, from United States Department of Agriculture Farmers' Bulletin No. 1748, Ginning Cotton.

Cotton and Cotton Ginning. (Cont'd)

Cotton picker tried here. Arizona Producer. v.14, no.18. December 1, 1935. p.3. High growth causes difficulties but Rust principle proves correct. Cotton picked by machine at rate of 1,000 pounds an hour, and picked cleaner than if it had been removed from bolls by hand. Different model, one that travels ahead of tractor instead of behind, would do much better job in our high, rank growth. Difficulty was that tractor knocked off about 25% of cotton before picker ever got to it. Principle of Rust picker is simple. There are 15 rows of 84 wire spindles on traveling belt. Lower edge of belt is almost on ground, upper edge is two feet above. Spindles stick straight out and are kept revolving at high speed by means of friction drive. Another feature, very important, is that each spindle is moistened as belt passes a set of rubber bands that in turn are kept wet by sponge. Picker straddles cotton row and every plant is forced through "tunnel." It is almost inevitable that every boll come in contact with one of the spindles. Its lint is wrapped around wet, revolving spindle, carried on and stripped off, to be blown up to top of revolving bag.

Making cotton at the gin. By Stanley Andrews. American Cotton Grower. v.1, no.4. September 1, 1935. p.6-7.

Relative economic advantages of harvesting cotton by picking and snapping in western Oklahoma. By Clyde C. McWhorter and Roy A. Ballinger. 1935. 74p. Oklahoma Agricultural Experiment Station Bulletin no. 227.

Simplified pitot tube calculations of air flow in ducts and pipes. By Charles A. Bennett. Cotton Ginners' Journal. v.7, no.2. November, 1935. p.3-4.

Dams.

Earthfill dam to be built by method of soil-compaction control. Engineering News-Record. v.115, no.24. December 12, 1935. p.807. Cross section of Cajalco Dam, showing outlines of present and ultimate structures.

Diesel Engines.

Diesel engines in transportation. By O.D. Treiber. S.A.E. Journal. v.37, no.4. October, 1935. p.378-382. Subjects treated include noise, smoke, installation, performance, power output and maintenance, together with fuel and lubricating oil costs. Comparisons between Diesel and gasoline-engine performance in similar service are made.

Drainage.

Agricultural Engineers dedicate monument to tile drainage pioneer. Agricultural Engineering. v.16, no.11. November, 1935. p.454-455.

Drainage. (Cont'd)

John Johnston, the man who buried crockery. American Agriculturist. v.132, no.22. October 26, 1935. p.3.

Moisture management on dry land. By M,N. Beeler. Capper's Farmer. v.46, no.12. December, 1935. p.5, 26.

Electric Home and Farm Authority.

R.E.A. grants loans totaling $1,274,084. Electrical World. v.105, no. 23. November 9, 1935. p.43-44. 4,247 farm customers to be served. Six public concerns and one private to receive funds. Loan contracts involving $1,274,084 to finance construction of 1,122 miles of electric lines.

To electrify rural America. Farm & Ranch. v.54, no.18. September 15, 1935. p.9. Electric Home and Farm Authority has been reincorporated and reorganized to give its operations national scope. It will undertake financing of retail sales of electrical and plumbing equipment and appliances in cities and in rural areas. Rural operations of EHFA will tie in closely with program of Rural Electrification Administration. On basis of one million homes, prospective expenditures for material, equipment and applicances have been estimated as follows: Wiring and lighting, $80,000,000; Plumbing and sanitary equipment $30,000,000; Appliances - house and farm $209,000,000.

Electric Service, Rural.

Cable halves cost of service extension. By G.S. Van Antwerp. Electrical World. v.105, no. 23. November 9, 1935. p.24-25. Unit cost lowered from 30 to 15 cents per foot with cable laid and covered by plow. Involves underground construction with new equipment.

Controls for rural switching. By H.W. Collins and P.O. Lamgguth. Electrical World. v.105, no.22. October 26, 1935. p.42-43. Simple, inexpensive, compact, pole-mounted, automatic protective equipment has given satisfactory service since its installation.

Farm power from highlines. By C.W. Mullen. Farmer-Stockman. v.48, no.20. October 15, 1935. p.3.

Let's not make the same mistake twice. By Frank B. Rae, Jr. Electrical World. v.105, no.24. November 23, 1935. p.27, 98. Expansion to farm market should be in terms of service rendered. Care should be taken to avoid growth of a host of minimum use customers. Sales of useful items should be advocated. Good advice, based upon past experience, on rural electrification.

New highs for electric power. By Francis C. Fullerton. Magazine of Wall Street. v.57, no.3. November 23, 1935. p.134-135, 166, 168.

Electric Service, Rural. (Cont'd)

Record of a co-operative farm line. Electrical World. v.105, no.22. October 26, 1935. p. 37, 84. Shows fifteen years experience with rural co-operative line. Indicates what will happen with R.E.A. funds unless supervision, accounting and management are given to rural co-operatives. Farmers cannot build and operate electrical system. This interesting history gives factual background to rural electrification that is needed badly.

Rural electrification. By Miles Horst. Pennsylvania Farmer. v.113, no.10. November 9, 1935. p.1, 18. Some of major steps of progress made during these eight years in which rural group has had definite part are: (1) Placing responsibility on electric companies to build lines at their expense. (2) When rural group first got active, it was common for electrical companies to require 33 per cent gross return on their investment per year. When Order 28 was first put into effect required return was placed at 24 per cent per year. In 1933 this was reduced to 21 per cent per year, and on January 1st, 1935, to 18 per cent per year. (3) From beginning rural group has worked on lowering costs of building lines, for on those costs minimums are based. (4) Probably most important fundamental principle in our present rural electrification set-up in Pennsylvania, on which rural group insisted and to which industry group early agreed, was that company should charge same rates per K.W.H. in country districts as in urban districts. (5) Another point was that rates be adapted to farm service, providing service through one meter and under form of rate whereby current would become cheaper with greater use. (6) Two committees together have sponsored considerable investigational work both at the Pennsylvania State College and on farms of state to gather information which would be useful to farmers and homemakers generally in putting electricity to its most effective use.

Rural electrification for Imperial Valley. California Cultivator. v.82, no.24. November 23, 1935. p.711. Allocation of $700,000 has been made to Imperial Irrigation District, for construction of 497 miles of transmission and distribution lines to serve rural area in Imperial County in which 1,500 families make their homes. Electric energy will be furnished ultimately by hydro-electric plants owned by Irrigation District which are under construction along partly completed All-American canal. Until such time as these plants are ready for service, electricity will be supplied by a Diesel power plant now under construction.

Rural electrification program amplified by M.L. Cooke. Engineering News-Record. v.115, no.22. November 28, 1935. p.760. Federal support of long-range comprehensive program to bring electricity to at least half of farms in United States is economically and socially justifiable. This result should be accomplished in ten years, he estimates, at cost of about $1,500,000,000 of which at least one-third should eventually be self-supporting. Mr. Cooke's letter is reply to request of Senator Norris asking what would be involved in extending power lines to much larger percentage of rural homes than are now supplied with current, how soon this could be brought about, and whether, in

Electric Service, Rural, (Cont'd.

Administrator's judgment, subsidy would be justified to put such program into effect. Studies by Rural Electrification Administration indicate that present limitation of service to approximately 11 per cent of nation's farms is due to following factors; (1) prohibitive costs of line construction; (2) excessive demands for cash contributions for building lines; (3) high rates which discourage abundant use of current; (4) policy of extending monopolistic franchises as widely as possible while extending actual services only to more profitable areas. Much of REA's planning has been directed toward demonstrating that costs of rural service can be lowered by planning extensions to serve entire areas to secure economies of mass production; by building lines by contact after competitive bidding; by lowering overhead and capital charges; by encouraging rates that promote abundant consumption, and by furnishing reasonable terms for purchase of appliances.

Rural electrification projects. Electrical World. v.105, no.24. November 23, 1935. p.44. Details tabulated.

Electric Wiring.

Lower cost wiring for the farm. By Morris H. Lloyd. Agricultural Engineering. v.16, no. 11. November, 1935. p.431-435. Of all items discussed, namely service-entrance cable, grounding, entrance switches, service-entrance capacity formula, pole matering, non-metallic sheathed cable, non-metallic sheathed cable with uninsulation neutral and unfused main switch, perhaps no one of them will cause decided lowering in cost of farm wiring installation, but in aggregate they will affect this cost materially and should make it possible for farmer to get more and better wiring for his money than has been possible heretofore.

Electricity on the Farm.

More light and power for Michigan farms. By H.J. Gallagher. Michigan Farmer. v.185, no. 9. October 26, 1935. p.1-2.

Rural electrification in the United States. By J.P. Schaenzer. Agricultural Engineering. v.16, no. 11. November, 1935. p.446-448, 450.

Erosion Control.

Approve conservation program. Oregon Farmer. v.58, no. 22. October 31, 1935. p.4. Restoration of areas not suitable for farming to original grazing cover, control of erosion and resettlement of comparatively few families occupying areas under submarginal conditions are main objectives of resettlement administration and cooperating agencies. This administration has just announced approval of government purchase of about 140,000 acres of wheat and grazing lands in arid section of Jefferson and part of Deschutes county in east central Oregon, and of 65,000 acres of logged-off and burned-over lands in

Erosion Control. (Cont'd)

western Oregon. Allocation of $482,904 has been made for eastern Oregon project, and of $452,725 for two projects in western Oregon, for acquisition of lands now optioned in conservation areas established by resettlement administration.

Clay ratio as a criterior of susceptibility of soils to erosion. By George John Bouyoucos. Journal of American Society of Agronomy. v. 27, no. 9. September, 1935. p.738-741. $\frac{\text{Sand + Silt}}{\text{Clay}}$ ratio in soils is suggested in this paper as possible criterion of judging relative susceptibility of soils to erosion. This ratio is designated as clay ratio. It was compared with erosion ratio by using same soils and same mechanical analyses of these soils as reported by U.S. Bureau of Chemistry and Soils. Comparison shows that with few exceptions two ratios agree fairly well in indicating general susceptibility of soils to erosion..

Detention reservoirs for gully control. By Dwight D. Smith and Emerson Wolfe. Soil Conservation. v.1, no.4. November, 1935. p.12-13. Earthen dam with small tile drain supplemented by emergency side spillway at higher level.

Look at some of the Western projects. By H.H. Bennett. Soil Conservation. v.1, no.4. November, 1935. p.1-8.

Soil's eternal. By Charles W. Brinkman. Pennsylvania Farmer. v.113, no.8. October 12, 1935. p.5, 14-15.

Ten ways to save soil. By Ivy M. Howard. Capper's Farmer. v.46, no.12. December, 1935. p.21. Program is as follows: 1. Establishmemt of systematic crop rotation on each field. 2. Practicing of contour farming on all cultivated lands whether terraced or not. 3. Setting up of system of strip cropping on all clean cultivated fields whether terraced or not. 4. Terracing of good farm lands with slopes of from approximately 2 to 8 per cent. 5. Use of winter cover crops preferably legumes, to protect soil during winter months when it is not being utilized in crop production. 6. Protection from fire of all woodlands and grasslands. 7. Carrying out of systematic pasture management plan. 8. Retiring from cultivation of badly eroded submarginal lands and planting of such to either grass or timber. 9. Carrying out of economical gully control plans to assist nature in checking this form of erosion. 10. Location and construction of suitable farm reservoirs to impound surplus water from field and pasture lands.

What is soil conservation? Pennsylvania Farmer. v.113, no. 12. December 7, 1935. p.16-17. "Soil conservation" is term used to describe means and methods of preventing land from being worn away by action of elements, and of holding soil in place and maintaining its fertility.

Farm Buildings and Equipment.

Fire, wind no terror to metal farm buildings. Steel. v.97, no.20. November 11, 1935. p.40.

Farm Buildings and Equipment.

Mr. Vasold remodels his barn. By C.H. Jefferson. Hoard's Dairyman. v.80, no. 17. September 10, 1935. p.408. Important advantages of a pen barn are: (1) It is more economical; (2) It saves time in caring for livestock; (3) It is a more sanitary method of producing milk, since the small milking room can be kept clean; (4) Cows have more freedom, and should, therefore, be more comfortable; (5) Cows keep themselves cleaner in pen than in stanchion.

Planning, some work, a little cash, built this bull pen. American Agriculturist. v. no. September 14, 1935. p.3. Shows details of breeding rack from Cornell. Anyone handy with tools will find its construction simple.

Farm Machinery and Equipment.

A.S.A.E. power and machinery meeting. Farm Implement News. v.56, no.25. December 5, 1935. p.24-25, 32.

Because its cheaper to farm this way. By Tudor Charles. Kansas Farmer. v.73, no.22. October 26, 1935. p.3, 16.

Compare the cash outlay. By Stanley Martin. Capper's Farmer. v.46, no.12. December, 1935. p.6.

Corn shellers come to the front. By E.T. Leavitt. Implement and Tractor. v.50, no.24. November 30, 1935. p.9. Survey of tractor owners in one state revealed that 9 per cent utilize power for this purpose. Few farm machines have been improved to a greater extent than power corn sheller. Committee representing American Society of Agricultural Engineers, reports that present day machine is 90 per cent superior to those available in pre-war period.

Cutting cost of machinery and tools. By L.R. Neel. Southern Agriculturist. v.65, no. 10. October, 1935. p.8. Providing good shelter and using it. Putting machinery away properly. Lending and borrowing. Keeping up with hand tools. Saving machines by preparing land for their use.

Farm machines going places. Farm Implement News. v.56, no. 25. December 5, 1935. p.14. Farm machinery of 20 years ago is about as out of date as 1915 automobile in 1935. We can reasonably expect even greater improvements in farm implements in next 20 years than in last 20 years. Farmers are more alive to value of good machinery than ever before. Press release by S.H. McCrory.

Fall plowing. Southern Planter. v.96, no. 11. November, 1935. p.4, 29. Advantages of fall plowing. Type of plow important. Depth to plow. Speed in plowing.

Farm taxes paid with spreaders. By E.T. Leavitt. Implement & Tractor. v.50, no. 23. November 16, 1935. p.16. Better utilization of livestock manure provides fertility, checks erosion and increases productivity. Greater return on investment possible with modern machines.

Farm Machinery & Equipment. (Cont'd)

History of cultivation. Compiled by Lillian Church. Revised, 1935. 9.p. mimeographed. U.S. Dept. of Agriculture. Bureau of Agricultural Engineering. Information Series no. 52.

Mechanical walnut harvester. By Jack Klein. California Cultivator. v.82, no.24. November 23, 1935. p.708. It is driven by a small tractor which is part of machine. All wheels are shod with pneumatic tractor tires which stir up very little dust. At front is series of disks that cut up leaves and small branches which cover nuts. Behind these disks is battery of gears, each one mounted separately, which drive endless chains of mechanical fingers. These fingers open when almost to ground, and as they pass along they pick up anything that comes between them. Whatever they pick up, walnut, stick or clod of dirt, they hold lightly but firmly until they reach highest point on chain where they are forced open by cam, and material they are carrying is dropped on to conveyor running across machine. Conveyor is link affair which lets dirt and small clods drop through. Another similar conveyor at side carries material to back of machine. As it passes along on this conveyor a blast of air gets rid of leaves and sticks and more of dirt. At rear material drops on to belt from which an attendant riding on back platform picks out clods and stones similar in size and weight to walnuts, and therefore not separated from them. On ground that has been prepared for harvest by being dragged or harrowed the same as most good growers do for hand picking, machine has picked over ten acres a day with an accuracy of better than 97 per cent.

New type combine. By R.U. Blasingame. Pennsylvania Farmer. v.113, no.11. November 23, 1935. p.17. Five-foot combine mounted on rubber tires. Machine is operated by power take-off from tractor. Price of this combine is not much greater than that of ten-foot power take-off binder. New type of threshing cylinder has been developed. Threshing cylinder is as wide as cut - both being 60 inches. By this system there is no contraction of straw at cylinder. Therefore grain goes directly from cutter-bar to cylinder in thin layer. Grain is separated from straw by rubbing process and not by cylinder and concaves. Cylinder is equipped with eight rubber-faced bars. In front of cylinder is adjustable rubber-faced stripper plate. Underneath cylinder there are two rubber bar concaves. Cylinder speed can be varied from 425 to 1,700 r.p.m. Only chain used on this machine operates reel. All other parts are run through V belts. Most combines are designed to operate with their length parallel to line of travel. Hurley combine has only two wheel, only one each located at extreme end of machine. Thus travel through field is perpendicular to length of combine

Penalty of slow power. By K.M. Williams. Capper's Farmer. v.46, no.12. December, 1935. p.30, 35.

Picks up peas, saves shattering. Implement Record. v.32, no.12. December, 1935. p.14-15.

Farm Machinery & Equipment. (Cont'd)

State of farm equipment industry. By Harry G. Davis. Farm Implement News. v.56, no.24. November 21, 1935. p.22-23, 26-27. Facts of interest and value to all factors in the production and distribution of agricultural machines.

State of the industry. By Harry G. Davis. Implement Record. v.32, no.12. December, 1935. p.7-10. Summary of progress and condition of farm equipment trade, with suggestions bearing on future.

Farm Mechanics.

Converting old auto engine into farm power plant. By Floyd Morris. Southern Agriculturist. v.65, no.10. October, 1935. p.39.

Fertilizer Application.

Where to put the fertilizer. By H.R. Smalley and Jerome J. Henry. Farm Journal. v. no. December, 1935. p.30. Generally, a good rule to follow is to apply fertilizer in two bands about two inches below and two inches from each side of seed.

Fertilizer Spreaders.

Good fertilizer distributors increase crops for farmers. By G.A. Cumings. Agricultural Leader's Digest. v.16, no.8. November, 1935. p.22. Most fertilizer distributors are small and not costly, but they offer farmer better chance to increase crops than many other agricultural machines.

Fertilizers.

Effects of particle size on the properties and efficiency of fertilizers. By A.L. Mehring, L.M. White, W.H. Ross and J.E. Adams. 1935. 27p. U.S.Dept. of Agriculture. Technical bulletin no. 485.

Flood Control.

Checking the rampages of the Mississippi. By R.G. Skerrett. Compressed Air Magazine. v.40, no.6. June, 1935. p.4742-4745. Present plan of flood control no longer places entire dependence upon main levees for directing dangerously swollen waters of that great stream. Henceforth backwater areas and floodways will be available for its expansion in time of flood, and these avenues of relief will proportionately reduce the volume of water traveling onward toward the gulf between main levees. Secondary line of lower and inner levees will limit spread of water admitted to side basins, and lands between main and secondary levees will be overflowed only during extraordinary floods.

Distribution and utilization of flood waters. Science. v.82, no.2133. November 15, 1935. p.461-462. Main objective of Nakai Bito (Mexican

Springs) Experiment Station is to increase human carrying capacity of Navajo lands, not only to where they will take care of present increasing population, but to point where they will provide livable place for future generations. Accelerated erosion is not only washing away fertile lands, but it is causing lowering of water tables and changing soil moisture tables so that vegetation has little chance of assimilating even small part of precipitation. Cost of collecting and distributing these flood waters is comparatively small, amounting to but few dollars per acre. Effects are far reaching.

Probable flood flow from a small watershed. Public Works. v.66, no.9. September, 1935. p.12. Article brings out some points observed in study of watershed which has the following characteristics: Area 1.35 sq. mi.; length 2 miles; slope per 1,000 feet, average, 37 feet; topography, rugged and steep, but entirely wooded, and generally with considerable underbrush.

Wire-bound rock training walls solve Zion Park flood problem. By Thomas C. Parker and Frank A. Kittredge. Engineering News-Record. v.115, no.20. November 14, 1935. p.684-686. Torrential Virgin River freshets being held in a defined channel and eroding valley botton built up by use of walls of loose stone hooped and bound by steel netting.

Floors.

Firesafe new floors. By F.A. Lyman. Farm Journal. v. 59, no. 12. December, 1935. p.21. Loft floor is constructed of precast concrete joists which support reinforced concrete slab.

Forage Drying.

"Billingham" drier for grass and cereals. Implement and Machinery Review. v.61, no.727. November 1, 1935. p.604-605. Specifically designed to meet requirements of farm. Constructed to have high thermal efficiency, low fuel consumption and high output; low maintenance costs; lowest possible initial costs; to be simple in operation and ensure that grass is dry throughout; gives diagrammatic sketch of drier partly cut away to show interior.

Machine dried hay is better. Grain and Feed Journals. v.75, no.5. September 11, 1935. p.214. Metabolism trials were conducted by Louisiana station with beef steers and beef calves to compare nutritive value of machine-dried and field-cured soybean hay. Result of metabolism trials showed that machine drying apparently increased protein, ether extract, and nitrogen-free extract, but decreased crude fiber and ash content of soybean hay. Digestibility of protein of machine-dried hay varied little between years, while that of field-cured hay varied widely. Nutritive value of protein of machine-dried hay was slightly lower than that of field-cured hay.

Fuels.

Economics of gasoline volatility from the refinery viewpoint. By Hugh W. Field and Merrill J. Fowle. S.A.E. Journal. v.37, no.4. October,

Fuels. (Cont'd.)

1935. p.361-365; discussion, p.365-369. Motorist ultimately will have to pay about 30 per cent more for whatever benefits he may obtain by use of these very volatile gasolines.

Grains.

Specific gravity and air space of grains and seeds. By Frank J. Zink. Agricultural Engineering. v.16, no. 11. November, 1935. p.439-440. Table 1. Grain density and air space determinations. Table 2. Calculated densities of seeds based on legal weight bushel.

Hay, Moisture Content.

Equilibrium moistures of some hays. By Frank J. Zink. Agricultural Engineering. v.16, no. 11. November, 1935. p.451-452. Table 1. Equilibrium moistures of some hays.

Heating.

Cutting that fuel bill. By W.C. Krueger. New England Homestead. v. 108, no. 21. October 12, 1935. p.8. Here are several inexpensive and effective ways of reducing home heating costs.

Fuel saving resulting from the use of storm windows and doors. By A.P. Kratz and S. Kronze. Heating, Piping & Air Conditioning. v.7, no.12. December, 1935. p.595-599. Object of this investigation was to determine, under actual service over wide range in weather conditions, saving in fuel that could be effected by equipping typical residence with storm windows and doors; and to compare actual saving so effected with saving computed from heat loss calculations employing commonly accepted values for coefficients of heat transmission and infiltration. Conclusions: Following conclusions may be drawn from results of these tests: (1) Seasonal fuel saving of approximately 20 per cent may be obtained by equipping frame building similar to Research Residence with storm windows and storm doors. (2) Reasonable agreement can be obtained between fuel saving effected by storm windows and doors as computed from calculated heat losses and actual saving as determined by tests. Computed probable saving tends to be higher than that actually demonstrated by tests. (3) For given type of wall construction, fuel saving effected by storm windows and doors is dependent on ratio of area of windows and doors to net area of walls. Potential saving increases as this ration becomes greater. (4) Tightly fitting storm sash practically eliminate entrance of objectionable amounts of soot. (5) Storm windows make possible maintenance of higher indoor relative humidities without condensation appearing on the glass. (6) Use of storm windows reduces draft of cold air down windows, and increases temperature of air near floor of room.

General rules for economical heating. By J. Earl Seiter. Heating and Ventilating. v.32, no. 11. November, 1935. p.39.

Not too hot nor too cold. By Hobart Beresford. Oregon Farmer. v.58, no. 23. November 14, 1935. p.2. Regulation increases heating system's value and safety.

Heating. (Cont'd)

Radiator heat vs. warm air furnace. Heating and Ventilating. v.32, no.11. November, 1935. p.33-34.

Results of house heating studies. By Arthur H. Senner. Agricultural Engineering. v.16, no.11. November, 1935. p.449-450. Cost of heating house depends principally upon - 1, average outside temperature, and exposure of house to winds; 2, Degree of weather tightness of house; 3, average temperature maintained inside house; 4, efficiency with which fuel is burned, and heat transmitted to several rooms; 5, cost of fuel.

Houses.

Farm homes go modern. By C.W. Mullen. Farmer-Stockman. v.48, no.19. October 1, 1935. p.3, 21.

House plan; room arrangements and closets. Architectural Record. v.78, no. 5. November, 1935. p.299-310.

Housing the rural worker: progress of reconditioning in Decon. By R.T. Shears. Journal of the Ministry of Agriculture. v.42, no.6. September, 1935. p.542-550.

One-story farm house. Montana Farmer. v.23, no.4. October 15, 1935. p.14.

Three different houses from same floor plan. By J.F. Carter. Southern Agriculturist. v.65, no.10. October, 1935. p.6.

Houses, Remodeling.

Modernizing Montana's farm homes. By Paul T. DeVere. Montana Farmer. v.23, no.6. November 15, 1935. p.4, 22. How farm families are taking advantage of all the new conveniences.

Remade farm home. By Dan Scoates. Progressive Farmer. v.50, no.11. November, 1935. p.43.

Hydraulics.

Canal system studied in new hydraulic laboratory. Science News Letter. v.28, no. 758. October 19, 1935. p.243-244. Sixty-foot long experimental flume has glass on sides and bottom through which hydraulic engineers observe swirls, eddies and flow conditions with wide range of water velocities and depths. Although apparatus is quite new, a number of investigations have been made therein which indicate variety of tests which are possible. These include studies of stability of sand dams being constructed in connection with canalization for navigation of Upper Mississippi River, design of flood regulating works for various hydroelectric developments, experimental investigation of mechanics of hydraulic jump, hydraulic bore, waves of various types, and the like.

Insulation.

Effect of insulation on surface temperatures of contents of galvanized corrugated-iron sheathed buildings. By D.G. Williams. Mechanical Engineering. v.57, no. 11. November, 1935. p.687-690.

Metallic insulation. By J.T. Nichols. Ice & Cold Storage. v.38, no. 452. November, 1935. p.177-178. Tests for relative reflectivities.

Well insulated residences heat differently. By William M. Houghton. Heating and Ventilating. v.32, no. 11. November, 1935. p.28-30. Increasing use of more expensive fuels emphasize desirability of making investment in insulation and tight construction that will yield return in lower fuel costs. There is hardly any factor in design of heating installation effect of which can be as definitely predicted as use of insulation in building construction; and to ignore or mistrust its effect is simply bad engineering. If you are considering question of cutting down house temperatures at night, unless your house is uninsulated and leaky, the author's advice is "Forget it."

Irrigation.

Irrigation and drainage. By F.R. Arndt. Journal of Department of Agriculture of South Australia. v.39, no.1. August 15, 1935. p.58-69. Construction of main irrigation channels; moisture requirements of plants; irrigation systems; position of channels and length of rows; grade of watering; methods of watering; lateral movement of water; watering with multiple furrows; watering underneath vine trellis and fruit trees; semi-flooding; drainage; removal of surplus water by plant growth.

Irrigation objectives. By O.W. Israelson. Utah Farmer. v.56, no.7. November 10, 1935. p.6, 17. Some responsibilities of the Public to the solution of irrigation problems.

National Reclamation Association considers Western irrigation problems. Engineering News-Record. v.115, no.21. November 21, 1935. p.726. Gives officers elected for ensuing year.

Kitchens.

Convenient kitchen. Farmer-Stockman. v.48, no.18. September 15, 1935. p.16. Size of family and kind of work to be done must be considered in plan and arrangement of homemaker's workroom.

Lubrication.

Clutch and chain lubrication. By William Staniar. Factory Management and Maintenance. v.93, no.5. May, 1935. p.218-220. When properly done it will go a long way toward enabling these devices to give the low-cost service that is built into them.

Maps.

Dangerous work necessary in mapping Colorado River. Engineering News-Record. v.115, no.20. November 14, 1935. p.675. Aerial surveying of Colorado River above Boulder Dam which is being made to secure maps that will aid in studying silt deposition in reservoir involves difficult feat of securing accurate ground-control points, so that photograph may be fitted exactly into complete mosaic from which maps are made. Colorado River Canyon presents exceptionally difficult conditions for the establishment of control points.

Miscellaneous.

Engineering education. By John T. Wheeler. Agricultural Engineering. v.16, no.11. November, 1935. p.441-442, 445. Engineered education (1) will set up definite aims; (2) it will analyze its aims into their objective components to discover ways of attaining these aims; (3) it will have a philosophy for dealing with problems discovered by and through analyses of its aims, and (4) it will set up programs of education guided by its accepted philosophy, that will accomplish aims set up.

Men, ideas and achievements. Magazine of Wall Street. v.57, no.3. November 23, 1935. p.130-131. Horse came back on farms in 1932 and 1933, but now he is ambling off to retirement in quiet pastures or canned meat for Belgians. As he goes, farm tractor - more efficient at internal combustion - returns to rural hauling job.

Motors.

Motors in air conditioning. By Harold L. Alt. Domestic Engineering. v.146, no.5. November, 1935. p.83-84, 160-165.

National Resources Board.

State planning: Review of activities and progress. National Resources Board. Washington, D.C., U.S. Government Printing Office, 1935.

Poultry Houses, and Equipment.

Modern poultry houses help profits. Montana Farmer. v.23, no.5. November 1, 1935. p.3.

Poultry housing conditions. By E.E. Schnetzler. Purdue Agriculturist. v.30, no.2. November, 1935. p.13, 23.

Straw houses no fable. Western Farm Life. v.37, no.10. October 15, 1935. p.23. Nebraska farmers make them out of bales to protect their poultry flocks. Straw houses are built 20 feet deep, and as long as necessary to house average flock. Back of house is four bales high and front is usually eight or nine bales high, roof is thatched; windows and doorways are framed. Roof is supported through center by poles. Usually long poles are cut and laid from rear to front on top. On these woven wire is fastened, and 18 to 20 inches of loose straw is piled. Roof is then thatched with sudan grass or

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marsh grass. Roof may be anchored to eliminate possibility of its being blown off by sinking several "deadmen" along front and rear walls and attaching them to roof with no. 9 wire. Dirt floors are usually used, although sand is preferred.

Rain and Rainfall.

Correlation-periodogram investigation of rainfall on the western coast of the United States. By Ervin J. Prouse. Monthly Weather Review. v.63, no.8. August, 1935. p.245-248.

Measuring rainfall, runoff, stream and storm water flow. Public Works. v.66, no.9. September, 1935. p.20-21.

Precipitation along the coast. By Herbert Edward Floercky. Western Irrigation. v.18, no.2. November, 1935. p.7.

Rainfall in Muskingum Valley unusually heavy in August Storm. Engineering News-Record. v.115, no.20. November 14, 1935. p.689. Previous abnormal precipitation reduced available ground storage and caused intense runoff in final storm which rapidly brought streams to maximum stages.

Refrigeration.

Electric refrigeration. Lubrication. v.21, no.10. October, 1935. p.109-120.

Literature of refrigeration. By David L. Fiske. Refrigerating Engineering. v.30, no.5. November, 1935. p.255-257, 289. Notes prompted by a reorganization of the A.S.R.E. Library.

Methods of testing and rating mechanical condensing units approved by Nema and RMA. Electric Refrigeration News. v.16, no.10. November 6, 1935. p.17-18. Primary tests are as follows: (1) Brine tank calorimeter; (2) concentric tube calorimeter; (3) secondary refrigerant calorimeter; (4) flooded system primary refrigerant calorimeter; (5) dry system primary refrigerant calorimeter. Confirming tests are as follows: (1) Liquid refrigerant quantity method; (2) liquid refrigerant quantity meter and flow meter; (3) condenser water method.

Present practice with refrigerator cars. By William V. Hukill and D.F. Fisher. Refrigerating Engineering. v.30, no.2. August, 1935. p.75-78. Outline of investigations by United States Department of Agriculture in fruit and vegetable transport.

Refrigeration controls. By Alex S. Mitchell. Refrigerating Engineering. v.30, no.5. November, 1935. p.261-263. Attention is called to what practice of automatic control now constitutes. Influence of small machinery on control practice.

Standard testing methods for mechanical condensing units. Electric Refrigeration News. v.16, no.11. November 13, 1935. p.10-11.

Refrigeration. (Cont'd)

Adopted as standard by Refrigerating Machinery Association and Refrigeration Division of National Electrical Manufacturers Association. Secondary refrigerant calorimeter method. Flooded system primary. Refrigerant calorimeter method. Dry system primary refrigerant calorimeter method. Liquid refrigerant quantity method. Liquid refrigerant quantity meter and flow meter methods. Condenser water method.

Septic Tanks.

Septic tanks solve sewage disposal. By W.G. Kaiser. Farm & Ranch. v.54, no. 18. September 15, 1935. p.2, 16.

Sewage and Sewage Disposal.

Safe and efficient sewage disposal. Vt John S. Glass. Capper's Farmer. v.46, no.12. December, 1935. p.22, 28.

Silos.

Build the silo as you fill. Utah Farmer. v.56, no. 7. November 10, 1935. p.17. Quickest silo to build is crib type, consisting of section of clat fencing or woven wire lined with reinforced building paper. It may be a little more expensive than trench silo, but where materials are available, ensiling may proceed immediately without even two or three days delay occasioned by digging trench.

Temporary silos. Maryland Farmer. v.19, no. 9. September, 1935. p.11. Made from trench in ground or woven lath fencing.

Silt.

Silt passing through reservoir behind Boulder Dam. Engineering News-Record. v.115, no. 22. November 28, 1935. p.747. Soon after reservoir behind Boulder Dam began to fill, lake became clear and stream of water discharged below dam changed from normal muddy color to clear stream that was subject of comment of all who saw it and who had known the Colorado of old. This condition continued until recently when stream began to carry silt load, though lake remained clear. Lake now is about 310 feet deep at the dam, and is 80 miles long. Two explanations are given of new development. One is that silt laden waters entering lake far above dam are heavier than clear lake water and so move along bottom to dam without entirely losing their load of silt. Other is that silt has been deposited in upper reaches of lake until it has reached unstable level, and that it now again is being eroded by movement of water along bottom, and so is carried along bottom to dam.

Snow.

Measurement of snowfall to inform irrigators of Wyoming. Wyoming Stockman-Farmer. v.41, no. 11. November, 1935. p.15. Wyoming water users next spring are going to be able to look at new kind of chart designed to tell them what crops to plant, and when and how much water is going to run through their ditches during season.

Soil Sterilization.

New soil heating kit provides small growers with convenient test of electric hot-bed value. Market Growers Journal. v.57, no. 10. November 15, 1935. p.434. Diagram shows standard way of equipping hot bed.

Soil sterilization by electricity. By I.P. Blauser. Agricultural Engineering. v.16, no. 11. November, 1935. p.436-438, 440. Element type sterilizer has advantages of (1) definite, known demand; (2) all soils can be treated similarly and independently of moisture content, and (3) there is less danger in working with sterilizer. These advantages, however, seem to be more than offset by disadvantages of (1) higher first cost, (2) higher operating cost, and (3) very uneven heating of the soil. Resistance type of sterilizer has advantages of (1) low first cost, (2) lower operating cost, (3) even temperature throughout soil mass, and (4) simple construction so that most anyone can build his own sterilizer. The disadvantages of this type sterilizer are that (1) demand is not constant, and (2) more care must be used in working with sterilizer so that operator will not come in contact with soil or electrodes while they are connected to electric service.

Soils.

Soil surveys and their applications. By G.W. Robinson. Journal of the Ministry of Agriculture. v.42, no.6. September, 1935. p.561-570. Soil surveys must be regarded as long-range research work, which, although it yields immediate results by its assistance to current advisory work, may be expected to perform its greatest service by providing fundamental data for the guidance of planned development in future years.

Soil-loading machine tests four samples at once. By Philip C. Rutledge. Engineering News-Record. v.115, no. 23. December 5, 1935. p.783-786. New apparatus at Harvard soil-physics laboratory permits simultaneous test of consolidation, permeability, compression and shear, or of any combination of these four tests.

Steam Tables.

Third International Conference on steam tables. Mechanical Engineering. v.57, no. 11. November, 1935. p.710-713.

Terracing.

Farm sales for erosion control. By W.A. Steele. Implement Record. v.32, no. 12. December, 1935. p.20. Terracing and terrace maintenance made easy by individual farm outfits. Interesting figures on some recent demonstrations.

Tractors.

Once again, walking tractors! By A.A. Stone. Implement Record. v.32, no. 11. November, 1935. p.12-13. National authority outlines past

Tractors. (Cont'd)

developments and suggests future opportunities for regular dealers. Machines produced may be divided into three fairly distinct classes. 1. Light, power cultivators. 2. General purpose garden tractors. 3. Large garden tractors.

Power farming goes into high gear. By H.L. Harris. The Furrow. v.40. November-December, 1935. p. 4, 11. Swing to tractors gets new impetus with introduction of smaller models.

Right small tractor - is not short-lived equipment. By H.J. Daugherty. Implement Record. v.32, no. 11. November, 1935. p.16, 18.

Water, Underground.

Underground water storage in California south coastal basin. Engineering News-Record. v. 115, no. 22. November 28, 1935. p.733-738. Principal factors that are general guides to porosity of material in South Coastal Basin can be deduced from foregoing, and are as follows: 1. Size of stream from which it was deposited. 2. Distance from apex of cone. 3. Degree of weathering. 4. Depth beneath surface (compaction).

Water Supply, Rural.

Water is range problem. Idaho Farmer. v.53, no. 19. September 19, 1935. p.21. Seek inexpensive ways to obtain more for dry areas.